

Search History

STN

(HCAPLUS, INSPEC, JAPIO, USPATFULL, INPADOC)

6/5/2005

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(FILE 'HOME' ENTERED AT 15:18:55 ON 05 JUN 2007)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT  
15:19:17 ON 05 JUN 2007

L1 17937 S (CZ OR CZOCHARALSKI)  
L2 565245 S (MONO OR SINGLE) (8A) (CRYSTAL#)  
L3 16929 S (N(W)REGION#)  
L4 3440 S (OSF OR OXIDATION(W) INDUCED(W) STACKING(W) FAULT)  
L5 122049 S (RING(W)SHAPE#)  
L6 4509 S (GAS(W) FLOW(W) RING# OR GAS(W) FLOW) (8A) (CYLINDER# OR BAFFLE#)  
L7 12076 S (200(W)MM) (8A) (DIAMETER#)

=> s 11 and 12 and 13 and 14 and 15 and 16 and 17

L8 10 L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7

=> d 18 1-10 abs,bib

L8 ANSWER 1 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal with pulling the single crystal from a raw material melt in a chamber by CZ method, wherein when growing the single crystal, where a pulling rate is defined as V and a temperature gradient of the crystal is defined as G during growing the single crystal, the temperature gradient G of the crystal is controlled by changing at least two or more of pulling conditions including a diameter of the straight body of the single crystal, a rotation rate of the single crystal during pulling the single crystal, a flow rate of an inert-gas introduced into the chamber, a position of a heater heating the raw material melt and a distance between the melt surface of the raw material melt and a heat insulating member provided in the chamber so as to oppose to the surface of the raw material melt, thereby V/G which is a ratio of the pulling rate V and the temperature gradient G of the crystal is controlled so that a single crystal including a desired defect region is grown. Thereby, there is provided a method for producing a single crystal in which when the single crystal is grown by CZ method, V/G can be controlled without lowering a pulling rate V, and thus the single crystal including a desired defect region can be produced effectively for a short time.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2007:20399 USPATFULL

TI Process for producing single crystal and single crystal

IN Sakurada, Masahiro, Fukushima, JAPAN  
Iida, Makoto, Fukushima, JAPAN  
Mitamura, Nobuaki, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN

PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN, 1000005 (non-U.S.  
corporation)

PI US 2007017433 A1 20070125

AI US 2004-560581 A1 20040528 (10)  
WO 2004-JP7350 20040528

20060202 PCT 371 date

PRAI JP 2003-185773 20030627

DT Utility

FS APPLICATION

LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US

CLMN Number of Claims: 21

ECL Exemplary Claim: 1

DRWN 5 Drawing Page(s)

LN.CNT 1030

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 2 OF 10 USPATFULL on STN

AB The present invention provides a method for producing a single crystal by pulling a single crystal from a raw material melt in a chamber in accordance with Czochralski method, comprising pulling a single crystal having a defect-free region which is outside an OSF region to occur in a ring shape in the radial direction and which interstitial-type and vacancy-type defects do not exist in, wherein the pulling of the single crystal is performed with being controlled so that an average of cooling rate in passing through a temperature region of the melt point of the single crystal to 950° C. is in the range of 0.96° C./min or more and so that an average of cooling rate in passing through a temperature region of 1150° C. to 1080° C. is in the range of 0.88° C./min or more and so that an average of cooling rate in passing through a temperature region of 1050° C. to 950° C. is in the range of 0.71° C./min or more. Thereby, production margin in pulling a single crystal having a defect-free region can be considerably enlarged and therefore there can be provided a method for producing a single crystal by which production yield and productivity of the crystal having the defect-free region can be considerably improved.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:318540 USPATFULL

TI Method for producing a single crystal

IN Hoshi, Ryoji, Fukushima, JAPAN

Sonokawa, Susumu, Fukushima, JAPAN

PA Shin-Etsu Handotai Co., Ltd., Chiyoda-ku, JAPAN (non-U.S. corporation)

PI US 2006272570 A1 20061207

AI US 2004-573822 A1 20041019 (10)

WO 2004-JP15395 20041019

20060328 PCT 371 date

PRAI JP 2003-369855 20031030

DT Utility

FS APPLICATION

LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US

CLMN Number of Claims: 17

ECL Exemplary Claim: 1-7

DRWN 6 Drawing Page(s)

LN.CNT 751

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 3 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal in accordance with Czochralski method by flowing an inert gas downward in a chamber 1 of a single crystal -pulling apparatus 11 and surrounding a single crystal 3 pulled from a raw material melt 2 with a gas flow -guide cylinder 4, wherein when a single crystal within N region outside OSF region generated in a ring shape in the radial direction of the single crystal is pulled, the single crystal within N region is pulled in a condition that flow amount of the inert gas between the single crystal and the gas flow -guide cylinder is 0.6 D(L/min) or more and pressure in the chamber is 0.6 D(hPa) or less, in which D (mm) is a diameter of the single crystal to be pulled. It is preferable that there is used the gas flow-guide cylinder

*Applicant's  
Signature*

that Fe concentration is 0.05 ppm or less, at least, in a surface thereof. Thereby, there is provided a method for producing a single crystal, wherein in the case that a single crystal is produced by an apparatus having a gas flow-guide cylinder in accordance with CZ method, the single crystal has low defect density and Fe concentration can be suppressed to be 1+10.sup.10 atoms/cm.sup.3 or less even in a peripheral part thereof.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:277991 USPATFULL  
TI Process for producing single crystal and silicon crystal wafer  
IN Fusegawa, Izumi, Fukushima, JAPAN  
Mitamuria, Nobuaki, Fukushima, JAPAN  
Yanagimachi, Takahiro, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Chiyoda-ku, JAPAN (non-U.S. corporation)  
PI US 2006236919 A1 20061026  
AI US 2004-568186 A1 20040813 (10) WO 2004-JP11685 20040813  
20060303 PCT 371 date  
PRAI JP 2003-296837 20030820  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 18  
ECL Exemplary Claim: 1-6  
DRWN 5 Drawing Page(s)  
LN.CNT 631

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 4 OF 10 USPATFULL on STN  
AB The present invention is a method for producing a single crystal of which a whole plane in a radial direction is a defect-free region with pulling the single crystal from a raw material melt in a chamber by Czochralski method, wherein a pulling condition is changed in a direction of the crystal growth axis during pulling the single crystal so that a margin of a pulling rate is always a predetermined value or more that the single crystal of which the whole plane in a radial direction is a defect-free region can be pulled. Thereby, there can be provided a method for producing a single crystal in which when a single crystal is produced by CZ method, the single crystal of which a whole plane in a radial direction is a defect-free region entirely in a direction of the crystal growth axis can be produced with stability.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:205843 USPATFULL  
TI Method for producing single crystal and single crystal  
IN Mitamura, Nobuaki, Fukushima, JAPAN  
Ohta, Tomohiko, Gunma, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Sakurada, Masahiro, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN  
PA SHIN-ETSU HANDOTAI CO., LTD., Tokyo, JAPAN (non-U.S. corporation)  
PI US 2006174819 A1 20060810  
US 7226507 B2 20070605  
AI US 2004-561865 A1 20040527 (10)  
WO 2004-JP7252 20040527  
20060220 PCT 371 date  
PRAI JP 2003-184838 20030627

DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928 ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 21  
ECL Exemplary Claim: 1-11  
DRWN 9 Drawing Page(s)  
LN.CNT 1041  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 5 OF 10 USPATFULL on STN

AB The present invention is a method for producing a single crystal with pulling the single crystal from a raw material melt by CZ method, wherein when growing the single crystal, where a pulling rate is defined as V, a temperature gradient of the crystal at a central portion of the crystal is defined as Gc, and a temperature gradient of the crystal at a peripheral portion of the crystal is defined as Ge, the temperature gradient Gc at the central portion of the crystal and the temperature gradient Ge at the peripheral portion of the crystal are controlled by changing a distance between the melt surface of the raw material melt and a heat insulating member provided so as to oppose to the surface of the raw material melt, thereby difference  $\Delta G$  between the temperature gradient Gc at the central portion of the crystal and the temperature gradient Ge at the peripheral portion of the crystal is  $0.5^{\circ}\text{C./mm}$  or less, and also V/Gc which is a ratio of the pulling rate V and the temperature gradient Gc at the central portion of the crystal is controlled so that a single crystal including a desired defect region can be grown. Thereby, there is provided a method for producing a single crystal in which when the single crystal is grown by CZ method, V/G can be controlled without lowering the pulling rate V, and thus the single crystal including a desired defect region over a whole plane in the radial direction entirely in the direction of the crystal growth axis can be produced effectively for a short time and at high yield.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:155224 USPATFULL  
TI Process for producing single crystal and single crystal  
IN Sakurada, Masahiro, Fukushima, JAPAN  
PI US 2006130740 A1 20060622  
AI US 2004-561205 A1 20040528 (10)  
WO 2004-JP7349 20040528  
20060203 PCT 371 date

PRAI JP 2003-185960 20030627

DT Utility  
FS APPLICATION

LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 49  
ECL Exemplary Claim: 1-9  
DRWN 5 Drawing Page(s)  
LN.CNT 1249

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 6 OF 10 USPATFULL on STN

AB There are disclosed a silicon wafer for epitaxial growth wherein the wafer is produced by slicing a silicon single crystal grown with doping nitrogen according to the Czochralski method (CZ method) in the region where at least the center of the wafer becomes V region in which the void type defects are generated, and wherein the number of defects having an opening size of 20 nm or less among the void type defects appearing on the surface of the wafer is  $0.02/\text{cm.sup.2}$  or less, and an epitaxial wafer wherein an epitaxial layer

is formed on the silicon wafer for epitaxial growth. Thereby, there can be produced an epitaxial wafer having a high gettering capability wherein very few SF exist in the epitaxial layer easily at high productivity and at low cost.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:243977 USPATFULL  
TI Silicon wafer for epitaxial growth, epitaxial wafer, and its manufacturing method  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Sonokawa, Susumu, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI US 2005211158 A1 20050929  
US 7204881 B2 20070417  
AI US 2003-520099 A1 20030708 (10)  
WO 2003-JP8671 20030708  
20050104 PCT 371 date  
PRAI JP 2002-204703 20020712  
DT Utility  
FS APPLICATION  
LREP OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VA, 22320, US  
CLMN Number of Claims: 30  
ECL Exemplary Claim: 1-11  
DRWN 6 Drawing Page(s)  
LN.CNT 849

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 7 OF 10 USPATFULL on STN

AB The present invention provides a silicon wafer sliced from a silicon single crystal ingot grown by the Czochralski method under such conditions that V-rich region should become dominant, wherein count number of particles having a size of 0.1  $\mu\text{m}$  or more is 1 count/cm.sup.2 or less when particles are counted by using a particle counter and a method for producing a silicon single crystal. Thus, there is provided a production technique that can improve productivity and reduce cost for high quality silicon wafers of excellent device characteristics by further reducing density and size of defects such as COP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2002:284777 USPATFULL  
TI Silicon wafer and method for producing silicon single crystal  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Ohta, Tomohiko, Fukushima, JAPAN  
Maeda, Shigemaru, Fukushima, JAPAN  
PI US 2002157598 A1 20021031  
US 6632411 B2 20031014  
AI US 2001-979519 A1 20011123 (9)  
WO 2001-JP2451 20010327  
PRAI JP 2000-92337 20000329  
DT Utility  
FS APPLICATION  
LREP Oliff & Berridge, PO Box 19928, Alexandria, VA, 22320  
CLMN Number of Claims: 9  
ECL Exemplary Claim: 1  
DRWN 4 Drawing Page(s)  
LN.CNT 705

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 8 OF 10 USPAT2 on STN

AB The present invention is a method for producing a single crystal of which a whole plane in a radial direction is a

defect-free region with pulling the single crystal from a raw material melt in a chamber by Czochralski method, wherein a pulling condition is changed in a direction of the crystal growth axis during pulling the single crystal so that a margin of a pulling rate is always a predetermined value or more that the single crystal of which the whole plane in a radial direction is a defect-free region can be pulled. Thereby, there can be provided a method for producing a single crystal in which when a single crystal is produced by CZ method, the single crystal of which a whole plane in a radial direction is a defect-free region entirely in a direction of the crystal growth axis can be produced with stability.

CAS INDEXING IS AVAILABLE FOR THIS PATENT

AN 2006:205843 USPAT2  
TI Method for producing single crystal and single crystal  
IN Mitamura, Nobuaki, Fukushima, JAPAN  
Ohta, Tomohiko, Gunma, JAPAN  
Fusegawa, Izumi, Fukushima, JAPAN  
Sakurada, Masahiro, Fukushima, JAPAN  
Ozaki, Atsushi, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI US 7226507 B2 20070605  
WO 2005001169 20050106  
AI US 2004-561865 20040527 (10)  
WO 2004-JP7252 20040527  
20060220 PCT 371 date  
PRAI JP 2003-184838 20030627  
DT Utility  
FS GRANTED  
EXNAM Primary Examiner: Hiteshew, Felisa  
LREP Oliff & Berridge PLC  
CLMN Number of Claims: 9  
ECL Exemplary Claim: 1  
DRWN 12 Drawing Figure(s); 9 Drawing Page(s)  
LN.CNT 995  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 9 OF 10 USPAT2 on STN

AB There are disclosed a silicon wafer for epitaxial growth wherein the wafer is produced by slicing a silicon single crystal grown with doping nitrogen according to the Czochralski method (CZ method) in the region where at least the center of the wafer becomes V region in which the void type defects are generated, and wherein the number of defects having an opening size of 20 nm or less among the void type defects appearing on the surface of the wafer is 0.02/cm.<sup>2</sup> or less, and an epitaxial wafer wherein an epitaxial layer is formed on the silicon wafer for epitaxial growth. Thereby, there can be produced an epitaxial wafer having a high gettering capability wherein very few SF exist in the epitaxial layer easily at high productivity and at low cost.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:243977 USPAT2  
TI Silicon wafer for epitaxial growth, an epitaxial wafer, and a method for producing it  
IN Hoshi, Ryoji, Fukushima, JAPAN  
Sonokawa, Susumu, Fukushima, JAPAN  
PA Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI US 7204881 B2 20070417  
WO 2001027362 20010419  
AI US 2003-520099 20030708 (10)

WO 2003-JP8671                    20030708  
                                      20050104                    PCT 371 date  
PRAI    JP 2002-204703            20020712  
DT      Utility  
FS      GRANTED  
EXNAM Primary Examiner: Hiteshew, Felisa  
LREP    Oliff & Berridge, PLC  
CLMN    Number of Claims: 29  
ECL     Exemplary Claim: 1  
DRWN    10 Drawing Figure(s); 6 Drawing Page(s)  
LN.CNT 845  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 10 OF 10 USPAT2 on STN

AB     The present invention provides a silicon wafer sliced from a silicon single crystal ingot grown by the Czochralski method under such conditions that V-rich region should become dominant, wherein count number of particles having a size of 0.1  $\mu\text{m}$  or more is 1 count/cm.sup.2 or less when particles are counted by using a particle counter and a method for producing a silicon single crystal. Thus, there is provided a production technique that can improve productivity and reduce cost for high quality silicon wafers of excellent device characteristics by further reducing density and size of defects such as COP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT

AN    2002:284777 USPAT2  
TI    Silicon wafer and method for producing silicon single crystal  
IN    Hoshi, Ryoji, Fukushima, JAPAN  
      Fusegawa, Izumi, Fukushima, JAPAN  
      Ohta, Tomohiko, Fukushima, JAPAN  
      Maeda, Shigemaru, Fukushima, JAPAN  
PA    Shin-Etsu Handotai Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)  
PI    US 6632411                    B2 20031014  
      WO 2001073169 20011004  
AI    US 2001-979519                20011123 (9)  
      WO 2001-JP2451                20010327  
PRAI    JP 2000-92337              20000329  
DT    Utility  
FS    GRANTED  
EXNAM Primary Examiner: Hiteshew, Felisa  
CLMN    Number of Claims: 20  
ECL     Exemplary Claim: 1  
DRWN    7 Drawing Figure(s); 4 Drawing Page(s)  
LN.CNT 723  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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**PALM INTRANET**

Day : Tuesday  
 Date: 6/5/2007  
 Time: 14:29:34

**Inventor Name Search Result**

Your Search was:

Last Name = FUSEGAWA

First Name = IZUMI

<b>Application#</b>	<b>Patent#</b>	<b>Status</b>	<b>Date Filed</b>	<b>Title</b>	<b>Inventor Name</b>
06941624		Not Issued	161	12/11/1986 METHOD AND APPARATUS FOR CZOCHRALSKI SINGLE CRYSTAL GROWING	FUSEGAWA, IZUMI
07242414	4956153		250	09/09/1988 APPARATUS FOR CZOCHRALSKI SINGLE CRYSTAL GROWING	FUSEGAWA, IZUMI
07496750	5110404		150	03/21/1990 METHOD FOR HEAT PROCESSING OF SILICON	FUSEGAWA, IZUMI
07703750		Not Issued	166	05/21/1991 METHOD FOR PULLING UP SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
07713848	5306387		150	06/12/1991 METHOD FOR PULLING UP SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
07729026		Not Issued	161	07/12/1991 METHOD FOR PULLING SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
07796385	5688319		150	11/22/1991 METHOD FOR TESTING ELECTRICAL PROPERTIES OF SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
07850506	5262338		250	03/13/1992 METHOD FOR FABRICATION OF SEMICONDUCTOR DEVICE	FUSEGAWA, IZUMI
07850915		Not Issued	166	03/13/1992 HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
07850916	5386796		150	03/13/1992 METHOD FOR TESTING QUALITY OF SILICON WAFER	FUSEGAWA, IZUMI
07852612	5248378		150	03/17/1992 METHOD AND APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
07953918	5359959		250	09/30/1992 METHOD FOR PULLING UP	FUSEGAWA, IZUMI

				SEMI-CONDUCTOR SINGLE CRYSTAL	
07961182	5462010	250	10/14/1992	APPARATUS FOR SUPPLYING GRANULAR RAW MATERIAL FOR A SEMICONDUCTOR SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
07961764	5373805	250	10/15/1992	SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
08011744	5340434	250	02/01/1993	PROCESS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
08012172	5361721	250	02/02/1993	SINGLE CRYSTAL PULLING APPARATUS	FUSEGAWA, IZUMI
08108285	Not Issued	166	08/19/1993	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
08190604	Not Issued	166	02/02/1994	CRUCIBLE FOR PULLING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
08238722	5534112	150	05/05/1994	METHOD FOR TESTING ELECTRICAL PROPERTIES OF SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
08293214	Not Issued	166	08/19/1994	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL GROWN BY CZOCHRALSKI METHOD	FUSEGAWA, IZUMI
08395837	5501172	150	02/28/1995	METHOD OF GROWING SILICON SINGLE CRYSTALS	FUSEGAWA, IZUMI
08445029	Not Issued	166	05/19/1995	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
08510436	5720809	250	08/02/1995	CRUCIBLE FOR PULLING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
08552164	Not Issued	166	11/02/1995	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL GROWN BY CZOCHRALSKI METHOD	FUSEGAWA, IZUMI
08699719	5725661	250	07/01/1996	EQUIPMENT FOR PRODUCING SILICON SINGLE CRYSTALS	FUSEGAWA, IZUMI
08754784	5938841	150	11/21/1996	DEVICE FOR PRODUCING SINGLE CRYSTAL	FUSEGAWA, IZUMI
08760959	5766346	150	12/05/1996	APPARATUS FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
08770499	5851283	150	12/20/1996	METHOD AND APPARATUS	FUSEGAWA, IZUMI

				FOR PRODUCTION OF SINGLE CRYSTAL	
<u>08773351</u>	5871583	150	12/26/1996	AN APPARATUS FOR PRODUCING SILICON CRYSTAL	FUSEGAWA, IZUMI
<u>08916291</u>	5834322	250	08/22/1997	HEAT TREATMENT OF SI SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>09270277</u>	6153009	150	03/16/1999	METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL AND THE SILICON SINGLE CRYSTAL PRODUCED THEREBY	FUSEGAWA, IZUMI
<u>09290261</u>	6117231	150	04/13/1999	METHOD OF MANUFACTURING SEMICONDUCTOR SILICON SINGLE CRYSTAL WAFER	FUSEGAWA, IZUMI
<u>09429343</u>	6387466	150	10/28/1999	SINGLE-CRYSTAL SILICON WAFER	FUSEGAWA, IZUMI
<u>09646713</u>	6565822	150	09/21/2000	EPITAXIAL SILICON WAFER, METHOD FOR PRODUCING THE SAME AND SUBTRATE FOR EPITAXIAL SILICON WAFER	FUSEGAWA, IZUMI
<u>09673480</u>	Not Issued	161	10/16/2000	Method for producing silicon single crystals	FUSEGAWA, IZUMI
<u>09674858</u>	6423285	150	11/07/2000	Method for producing silicon single crystal and production apparatus therefor as well as crystal and silicon wafer produced by the method	FUSEGAWA, IZUMI
<u>09937132</u>	6632280	150	09/21/2001	SINGLE CRYSTAL GROWING DEVICE	FUSEGAWA, IZUMI
<u>09959381</u>	6592662	150	10/24/2001	METHOD FOR PREPARING SILICON SINGLE CRYSTAL AND SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>09979519</u>	6632411	150	11/23/2001	SILICON WAFER AND METHOD FOR PRODUCING SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10204278</u>	6764548	150	08/20/2002	APPARATUS AND METHOD FOR PRODUCING SILICON SEMICONDUCTOR SINGLE CRYSTAL	FUSEGAWA, IZUMI
<u>10204935</u>	6913646	150	08/27/2002	SILICON SINGLE CRYSTAL WAFER AND METHOD FOR PRODUCING SILICON	FUSEGAWA, IZUMI

				SINGLE CRYSTAL	
10312921	6893499	150	12/26/2002	SILICON SINGLE CRYSTAL WAFER AND METHOD FOR MANUFACTURING THE SAME	FUSEGAWA, IZUMI
10500580	7129123	150	07/01/2004	AN SOI WAFER AND A METHOD FOR PRODUCING AN SOI WAFER	FUSEGAWA, IZUMI
10510695	7179330	150	10/08/2004	METHOD OF MANUFACTURING SILICON SINGLE CRYSTAL, SILICON SINGLE CRYSTAL AND SILICON WAFER	FUSEGAWA, IZUMI
10512470	Not Issued	90	10/26/2004	A SILICON SINGLE CRYSTAL WAFER, AN EPITAXIAL WAFER AND A METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL	FUSEGAWA, IZUMI
10516347	Not Issued	94	11/30/2004	GRAPHITE HEATER FOR PRODUCING SINGLE CRYSTAL, APPARATUS FOR PRODUCING SINGLE CRYSTAL, AND METHOD FOR PRODUCING SINGLE CRYSTAL	FUSEGAWA, IZUMI
10538878	7214268	150	06/14/2005	METHOD OF PRODUCING P-DOPED SILICON SINGLE CRYSTAL AND P-DOPED N-TYPE SILICON SINGLE CRYSTAL WAFER	FUSEGAWA, IZUMI
10542376	Not Issued	30	07/14/2005	AN SOI WAFER AND A METHOD FOR PRODUCING THE SAME	FUSEGAWA, IZUMI
10561865	7226507	150	02/20/2006	METHOD FOR PRODUCING SINGLE CRYSTAL AND SINGLE CRYSTAL	FUSEGAWA, IZUMI
10568186	Not Issued <i>Applicant's Invention</i>	30	03/03/2006	Method for producing a single crystal and silicon single crystal wafer	FUSEGAWA, IZUMI

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Last Name = MITAMURA

First Name = NOBUAKI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#"><u>07557574</u></a>	<a href="#"><u>5030017</u></a>	150	07/24/1990	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#"><u>07560445</u></a>	<a href="#"><u>5084116</u></a>	150	07/31/1990	ROLLING CONTACT ELEMENT STEEL AND ROLLING BEARING MADE THEREOF	MITAMURA, NOBUAKI
<a href="#"><u>07572480</u></a>	<a href="#"><u>5085733</u></a>	150	08/23/1990	ROLLING CONTACT PARTS STEEL AND ROLLING BEARING MADE THEREOF	MITAMURA, NOBUAKI
<a href="#"><u>07915503</u></a>	Not Issued	161	07/20/1992	BALL AND ROLLER BEARING	MITAMURA, NOBUAKI
<a href="#"><u>07946638</u></a>	<a href="#"><u>5338377</u></a>	150	09/18/1992	BALL-AND ROLLER BEARING	MITAMURA, NOBUAKI
<a href="#"><u>08134588</u></a>	<a href="#"><u>5427457</u></a>	150	10/12/1993	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#"><u>08242668</u></a>	<a href="#"><u>5413643</u></a>	150	05/13/1994	ROLLING BEARING	MITAMURA, NOBUAKI
<a href="#"><u>08374179</u></a>	Not Issued	166	01/18/1995	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<a href="#"><u>08512419</u></a>	<a href="#"><u>5660647</u></a>	150	08/08/1995	ROLLING BEARING WITH IMPROVED WEAR RESISTANCE	MITAMURA, NOBUAKI
<a href="#"><u>08519643</u></a>	<a href="#"><u>5626974</u></a>	150	08/25/1995	ROLLING BEARING FOR USE UNDER HIGH TEMPERATURE CONDITIONS	MITAMURA, NOBUAKI
<a href="#"><u>08536773</u></a>	<a href="#"><u>5672014</u></a>	150	09/29/1995	ROLLING BEARINGS	MITAMURA, NOBUAKI
<a href="#"><u>08542828</u></a>	<a href="#"><u>5853660</u></a>	150	10/13/1995	A ROLLING BEARING MADE OF IMPROVED BEARING STEEL	MITAMURA, NOBUAKI
<a href="#"><u>08683195</u></a>	<a href="#"><u>5958155</u></a>	150	07/18/1996	PROCESS FOR PRODUCING THIN FILM	MITAMURA, NOBUAKI

<u>08745635</u>	5855531	150	11/08/1996	COMPONENT PARTS OF A TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION HAVING IMPROVED LIFE	MITAMURA, NOBUAKI
<u>08763883</u>	5887015	150	12/11/1996	HEATER MECHANISM FOR CRYSTAL PULLING APPARATUS	MITAMURA, NOBUAKI
<u>08877950</u>	5989694	150	06/17/1997	ROLLING BEARING	MITAMURA, NOBUAKI
<u>08955294</u>	Not Issued	164	10/21/1997	ROLLING BEARING MADE OF IMPROVED BEARING STEEL	MITAMURA, NOBUAKI
<u>09098980</u>	6171414	150	06/17/1998	ROLLING BEARING	MITAMURA, NOBUAKI
<u>09108174</u>	6174257	150	07/01/1998	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09181911</u>	6174258	150	10/29/1998	TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09183630</u>	6066068	150	10/30/1998	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09187607</u>	6165100	150	11/06/1998	HIGH-CLEANNESS STEEL AND TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION INCLUDING COMPONENTS SUCH AS INPUT/OUTPUT DISCS, POWER ROLLER AND CAM DISC USING THE HIGH-CLEANNESS STEEL	MITAMURA, NOBUAKI
<u>09226032</u>	6174085	150	01/05/1999	LINEAR/GUIDE BEARING DEVICE	MITAMURA, NOBUAKI
<u>09235052</u>	6196946	150	01/21/1999	POWER ROLLER BEARING OF TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION AND METHOD OF MANUFACTURING POWER ROLLER BEARING OF TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09245931</u>	Not	161	02/08/1999	TEMPERATURE-	MITAMURA,

	Issued			INDEPENDENT OPTICAL ELEMENT	NOBUAKI
<u>09272731</u>	6210542	150	11/04/1998	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09339238</u>	6332714	150	06/24/1999	INDUCTION-HARDENED ROLLING BEARING DEVICE	MITAMURA, NOBUAKI
<u>09344380</u>	6328669	150	06/25/1999	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09349204</u>	6176806	150	07/07/1999	CAM DISK FOR TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09358554</u>	6478894	150	07/22/1999	ROLLING BEARING	MITAMURA, NOBUAKI
<u>09379748</u>	6152605	150	08/24/1999	BALL BEARING	MITAMURA, NOBUAKI
<u>09401917</u>	6358440	150	09/23/1999	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09697179</u>	6829053	150	10/27/2000	AIRGAP TYPE ETALON AND APPARATUS UTILIZING THE SAME	MITAMURA, NOBUAKI
<u>09886122</u>	6413188	150	06/22/2001	TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<u>09939566</u>	6646805	150	08/28/2001	APPARATUS FOR VARIABLE WAVELENGTH DISPERSION AND WAVELENGTH DISPERSION SLOPE	MITAMURA, NOBUAKI
<u>09957413</u>	6426022	150	09/20/2001	PROCESS FOR PRODUCING THIN FILM, THIN FILM AND OPTICAL INSTRUMENT INCLUDING THE SAME	MITAMURA, NOBUAKI
<u>09984396</u>	6807335	150	10/30/2001	WAVELENGTH CHARACTERISTIC VARIABLE APPARATUS	MITAMURA, NOBUAKI
<u>10061307</u>	6826318	150	02/04/2002	VARIABLE POLARIZATION PLANE ROTATOR AND OPTICAL DEVICE USING SAME	MITAMURA, NOBUAKI
<u>10164438</u>	6900940	150	06/10/2002	OPTICAL APPARATUS AND DEVICE	MITAMURA, NOBUAKI

<u>10278868</u>	7200297	150	10/24/2002	DEVICE USING A VIRTUALLY IMAGED PHASED ARRAY (VIPA) WITH AN IMPROVED TRANSMISSION WAVE CHARACTERISTIC OF OUTPUT LIGHT	MITAMURA, NOBUAKI
<u>10286779</u>	6862126	150	11/04/2002	TRANSMISSION WAVELENGTH CHARACTERISTICS VARIABLE OPTICAL ELEMENT, AND WAVELENGTH CHARACTERISTICS VARIABLE APPARATUS, OPTICAL AMPLIFIER, OPTICAL TRANSMISSION SYSTEM, AND CONTROL METHOD OF TRANSMISSION WAVELENGTH CHARACTERISTICS, USING SAME	MITAMURA, NOBUAKI
<u>10310900</u>	7137741	150	12/06/2002	ROLLING BEARING	MITAMURA, NOBUAKI
<u>10340842</u>	6909537	150	01/13/2003	DISPERSION COMPENSATOR WHOSE TRANSMISSION BAND IS FLATTENED	MITAMURA, NOBUAKI
<u>10341380</u>	6807008	150	01/14/2003	WAVELENGTH DISPERSION GENERATION APPARATUS, MULTI-FACED MIRROR USED FOR WAVELENGTH DISPERSION GENERATION APPARATUS, AND METHOD FOR MANUFACTURING THEREOF	MITAMURA, NOBUAKI
<u>10351376</u>	7016096	150	01/27/2003	TRANSMISSION WAVELENGTH CHARACTERISTICS VARIABLE OPTICAL ELEMENT, AND WAVELENGTH CHARACTERISTICS VARIABLE APPARATUS, OPTICAL AMPLIFIER, AND OPTICAL TRANSMISSION SYSTEM, USING SAME	MITAMURA, NOBUAKI
<u>10410342</u>	7037386	150	04/10/2003	ROLLING BEARING FOR CONTINUOUSLY VARIABLE	MITAMURA, NOBUAKI

				TRANSMISSION	
<a href="#"><u>10414308</u></a>	6923576	150	04/16/2003	ROLLING BEARING AND BELT CONTINUOUSLY VARIABLE TRANSMISSION	MITAMURA, NOBUAKI
<a href="#"><u>10500580</u></a>	7129123	150	07/01/2004	AN SOI WAFER AND A METHOD FOR PRODUCING AN SOI WAFER	MITAMURA, NOBUAKI
<a href="#"><u>10510695</u></a>	7179330	150	10/08/2004	METHOD OF MANUFACTURING SILICON SINGLE CRYSTAL, SILICON SINGLE CRYSTAL AND SILICON WAFER	MITAMURA, NOBUAKI
<a href="#"><u>10512470</u></a>	Not Issued	90	10/26/2004	A SILICON SINGLE CRYSTAL WAFER, AN EPITAXIAL WAFER AND A METHOD FOR PRODUCING A SILICON SINGLE CRYSTAL	MITAMURA, NOBUAKI

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Your Search was:

Last Name = YANAGIMACHI

First Name = TAKAHIRO

Application#	Patent#	Status	Date Filed	Title	Inventor Name
08759223	5888298	150	12/05/1996	MEMBER-HANDLING MECHANISM, AND MEMBER-HANDLING JIG FOR A CRYSTAL PULLING APPARATUS	YANAGIMACHI, TAKAHIRO
10204278	6764548	150	08/20/2002	APPARATUS AND METHOD FOR PRODUCING SILICON SEMICONDUCTOR SINGLE CRYSTAL	YANAGIMACHI, TAKAHIRO
*10568186	Not Issued <i>Applicants' Invention</i>	30	03/03/2006	Method for producing a single crystal and silicon single crystal wafer	YANAGIMACHI, TAKAHIRO

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